

## O B S. I.

The Sun shining into my darkened Chamber through a Hole  $\frac{1}{3}$  of an Inch wide, I let the intromitted beam of Light fall perpendicularly upon a Glass Speculum ground concave on one side and convex on the other, to a Sphere of five Feet and eleven Inches Radius, and quick-silvered over on the convex side. And holding a white opaque Chart, or a Quire of Paper at the Center of the Spheres to which the Speculum was ground, that is, at the distance of about five Feet and eleven Inches from the Speculum, in such manner, that the beam of Light might pass through a little Hole made in the middle of the Chart to the Speculum, and thence be reflected back to the same Hole: I observed upon the Chart four or five concentric Irises or Rings of Colours, like Rain-bows, encompassing the Hole much after the manner that those, which in the fourth and following Observations of the first part of this third Book appeared between the Object-Glasses, encompassed the black Spot, but yet larger and fainter than those. These Rings as they grew larger and larger became diluter and fainter, so that the fifth was scarce visible. Yet sometimes, when the Sun shone very clear, there appeared faint Lineaments of a sixth and seventh. If the distance of the Chart from the Speculum was much greater or much less than that of six Feet, the Rings became dilute and vanished. And if the distance of the Speculum from the Window was much greater than that of six Feet, the reflected beam of Light would be so broad at the distance of six Feet from the Speculum where the Rings appeared,

appeared, as to obscure one or two of the innermost Rings. And therefore I usually placed the Speculum at about six Feet from the Window; so that its Focus might there fall in with the center of its concavity at the Rings upon the Chart. And this posture is always to be understood in the following Observations where no other is exprest.

## O B S. II.

The Colours of these Rain-bows succeeded one another from the center outwards, in the same form and order with those which were made in the ninth Observation of the first Part of this Book by Light not reflected, but transmitted through the two Object-Glasses. For, first, there was in their common center a white round Spot of faint Light, something broader than the reflected beam of Light; which beam sometimes fell upon the middle of the Spot, and sometimes by a little inclination of the Speculum receded from the middle, and left the Spot white to the center.

This white Spot was immediately encompassed with a dark grey or russet, and that darkness with the Colours of the first Iris, which were on the inside next the darkness a little violet and indico, and next to that a blue, which on the outside grew pale, and then succeeded a little greenish yellow, and after that a brighter yellow, and then on the outward edge of the Iris a red which on the outside inclined to purple.

This Iris was immediately encompassed with a second, whose Colours were in order from the inside

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